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Researchers earn top USAF award

KIRTLAND AFB, N.M.– Researchers at the Air Force Research Laboratory's Directed Energy Directorate recently were named recipients of prestigious Air Force honors for scientific accomplishments. 2

PR Directorate builds upon HyTech's historic first

WRIGHT-PATTERSON AFB, Ohio—Researchers from the Air Force Research Laboratory's Propulsion Directorate moved into the next stage of development for the Hypersonic Technology program after they successfully ran a performance test engine of an integrated supersonic combustion ramjet using conventional fuels at speeds between Mach 4.5-6.5.....3

ML helps search for Lewis and Clark artifacts

TYNDALL AFB, Fla. — Air Force Research Laboratory Materials and Manufacturing Directorate experts are helping a group of modern-day explorers search for a long-lost artifact from Lewis and Clark's historic two-year expedition. 4

From Air Force Print News.....

Gen. Jumper, Secretary, chief of staff: A higher calling awaits

WASHINGTON — When he took the reins of the U.S. Air Force on Sept. 6, Chief of Staff Gen. John Jumper hardly could have imagined what the future would hold. 5

Additional information is available online including:

- **Breaking News Features**
- **Corporate Calendar**
- **Contact Information**

N.M. Balloon festival a dream come true

by Rich Garcia, Directed Energy Directorate

ALBUQUERQUE, N.M. – Suffering from a disabling and potentially fatal genetic disorder, the 8-year-old daughter of a United States Air Force employee from Wright-Patterson Air Force Base, Ohio, attended the Albuquerque Balloon Fiesta the weekend of October 6 under the auspices of A Special Wish Foundation.

Jenna Minges, born with a rare genetic disorder called 10-Quarter Deletion Syndrome that has led to severe heart defects, told the Columbus, Ohio-based foundation that her fondest desire was to attend an event that featured hot-air balloons. The Albuquerque fiesta was chosen because it is the largest of its kind in the world.

Jenna's father, Mark, works for the Air Force Research Laboratory's Information Directorate. One of the laboratory's sister units, the Directed Energy Directorate at Kirtland Air Force Base, N.M., and Kirtland's Airborne Laser System Program Office helped host Jenna and her family while in the area. Jenna also viewed the launching of the Airborne Laser's own hot-air balloon.

Festival continued on page 3

"SPECIAL WISH" COME TRUE — Tech. Sgt. Sara Deluzio, right, a vocalist with the Air Force band at Lackland AFB, Texas, sings a song to Jenna Minges, an 8-year-old suffering from a disabling and potential fatal genetic disorder. (Air Force photo)

Sept. 11 - We can all stand against hate

by Gen. Lester L. Lyles, Commander, Air Force Materiel Command

WRIGHT-PATTERSON AFB, Ohio — The unthinkable happened Sept. 11 - a tragedy of such huge proportion that it cannot be fully understood. Air Force Materiel Command people, like the rest of our nation, asked why.....5

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http://extra.afrl.af.mil/news/index.htm

Researchers earn top USAF Awards

by Conrad E. Dziewulski, Directed Energy Directorate

KIRTLAND AFB, N.M.– Researchers at the Air Force Research Laboratory's Directed Energy Directorate recently were named recipients of prestigious Air Force honors for scientific accomplishments.

Dr. Jane M. Lehr received the U.S. Basic Research Award while the Raven Small Telescope Team and the High-Power Microwave Source Antenna Team received Air Force Science and Engineering Awards in separate categories on September 4th.

Lehr, a senior scientist in the High-Power Microwave Division, will be honored for her pioneering practical and theoretical work in ultrafast switching and compact pulsed power. Within two years, her research with pulsed power and electromagnetics surpassed the achievements of the previous 15 years.

Last May, she was named an Outstanding New Mexico Woman for her professional accomplishments and community involvement. On September 22, Lehr was one of two women inducted into the New Mexico Women's Hall of Fame by the New Mexico Commission on the Status of Women.

Lehr, a directorate employee since 1997, has master and doctorate degrees in electrical engineering and plasma physics from Polytechnic Institute of New York.

Her award honors the scientific efforts and achievements in basic research and recognizes individuals who have made an outstanding and significant contribution in basic research.

The Raven team of Paul W. Kervin, Capt Robin E. Orth and Tech Sgt David L. Covey designed a low-cost operational telescope system from readily available commercial, astronomical components at the Space Surveillance System Branch, Maui, Hawaii. They received the award in the Engineering Achievement category.

The team also demonstrated that the system could meet deep-space track requirements and freed larger telescopes at the complex for more demanding tasks.

The High-Power Microwave Source Antenna team of Dr. Kyle J. Hendricks, Dr. Michael D. Haworth and Dr. John W. Luginsland received the award in the Exploratory or Advanced Technology Development category. The team successfully mated a billion-watt class, high-power microwave antenna with a compact pulsed power system that lead to a better understanding of the physics and engineering issues of these compact systems.

The Science and Engineering Award recognizes "working level" Air Force personnel for their outstanding contributions in research, development or engineering. @

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AFRL engineer pens book on teen drug abuse

PR's Outreach Project gives back to the community

Rome military members hold POW-MIA observance

Festival (from page 1)

While at the Balloon Fiesta, Jenna attended several events, including the fiesta's opening day Mass Ascension where more than 700 balloons were launched. She was also honored by Top Flight, an ensemble from the Air Force Band of the West at Lackland Air Force Base, Texas, who recognized Jenna on stage and dedicated a selection to her. As an honorary cadet with the Balloon Fiesta Academy, she joined 16 other visiting cadets from throughout the United States to make and fly small paper hot-air balloons.

In addition to attending the weeklong balloon fiesta, Jenna and her family toured several southwest sites and are scheduled to view the firing of a 15,000-watt research laser at the laboratory's Directed Energy Directorate.

The 10-Quarter Deletion Syndrome, named because victims have an abnormal 200-plus genes on the Q leg of chromosome Number 10, manifests itself in a number of heart defects. Jenna did not walk until she was 3 and, at 38 pounds, physically resembles a child at age 4 or 5. Her long-term fate is undetermined but medical articles indicate that individuals with the disease often do not live beyond their 12th birthday.

The A Special Wish Foundation, with 81 chapters in the United States and 22 others abroad, grants the wishes of children with life-threatening illnesses in an attempt to enrich their lives. @

PR Directorate builds upon HyTech's historic first

by Susan Barone, ASC Public Affairs

WRIGHT-PATTERSON AFB, Ohio—Researchers from the Air Force Research Laboratory's Propulsion Directorate moved into the next stage of development for the Hypersonic Technology program after they successfully ran a performance test engine of an integrated supersonic combustion ramjet using conventional fuels at speeds between Mach 4.5-6.5.

"The PTE met or exceeded all performance goals," said Parker Buckley, chief of the Aerospace Propulsion Office. "It's a historic first in that Air Force and NASA researchers have been working to develop a practical and operable scramjet for four decades."

Program officials are now in the process of designing the ground demonstrator engine. Near term application for this technology is to power a hypersonic cruise missile that is capable of flying at speeds between Mach 4 and Mach 8, and yet small and light enough for fighter and bomber aircraft to carry. The missile would destroy time-sensitive or time-critical targets at extended ranges.

"The aircraft that would launch these weapons could potentially strike targets deep in enemy territory without ever having to penetrate enemy air defenses," said Robert Mercier, deputy for technology for the Aerospace Propulsion Office of AFRL's Propulsion Directorate.

Looking to the future, Mercier said that the technology has long-term applicability to provide affordable access to space that could potentially be made on-demand by having a launch vehicle that would operate much like an airplane.

The PTE test was the first time a scramjet has successfully run on ordinary jet fuel. In the past, exotic, expensive and often toxic fuels were used to sustain combustion.

The latest major program involving scramjet propulsion ended in 1995 with the cancellation of the X-30, National Aero-Space Plane development. After the X-30 program was terminated, two programs were started: NASA's Hyper-X, which seeks to demonstrate hydrogen-fueled scramjets and the Air Force's HyTech program, which aims to demonstrate a hydrocarbon-fueled (i.e., jet fuel) scramjet that can operate from Mach 4 to Mach 8 without the use of ignition enhancement devices.

Engineers are building on the lessons learned during PTE and engine component structural durability tests.

"Our success and lessons learned to date give us confidence to move forward to the next stage of the program—testing of the GDE," said Mercier.

AFRL's Propulsion Directorate engineers conducted fuel mixing and injection studies in the scramjet research facility—test cell 22. One of the key challenges of the study included mixing the fuel with the air as it went through the engine.

The PTE was made out of copper for its ability to absorb and dissipate excess heat, while the walls of the GDE are made of a high temperature steel alloy and have passages in the walls through which jet fuel flows, absorbing heat from the engine and keeping the wall temperatures below acceptable limits.

"The engine structure will be the same as a flight engine, but will be sized to withstand facility start loads and would be a little heavier than the final flight engine," Mercier said. "The ground demonstration engine will be made out of flight weight materials and structural shapes that also will be cooled with the fuel, just like it will be on the vehicle," said Ronald.

AFRL Propulsion Directorate officials say the GDE will be tested in the next year and they hope to have a complete flight-ready engine demonstrated by 2004. @

Information technology highlighted at corporate board

CORPORATE BOARD DEMONSTRATION — Maj. Gen. Paul D. Nielsen, commander of the Air Force Research Laboratory, joins members of the AFRL Corporate Board in viewing a demonstration of the latest in information technology during the board's Oct. 10-11 meeting at the Information Directorate, AFRL Rome Research Site. (Air Force photo by Albert P. Santacroce) @

ML Directorate helps search for Lewis and Clark artifacts

by Timothy R. Anderl, Materials and Manufacturing Directorate

TYNDALL AFB, Fla. — Air Force Research Laboratory Materials and Manufacturing Directorate experts are helping a group of modern-day explorers search for a long-lost artifact from Lewis and Clark's historic two-year expedition.

Their goal is to find Capt Meriwether Lewis' iron boat frame, a nationally significant artifact representing an important milestone in the history of the United States.

This team of experts from the robotics sensor group of the directorate's air expeditionary forces branch surveyed 30 acres at the suspected burial site near Great Falls, Mont., Sept. 11-14, using state-of-the-art sensor and robotics equipment.

Walt Waltz, a program manager for robotics research within the directorate, said two robotic platforms, the group's Autonomous Mobility Research and Development System and the University of Florida's Mule, a four-wheeler with a technology navigation system, were used to tow two Electromagnetic Model 61 sensor coils. These coils, which are ground penetrating sensor systems, were used during the subsurface search of the area.

Waltz said the group deployed an additional sensor to the search site as a back up.

"In 1993, the Army Environmental Center funded our robotics research and development of an autonomous system that would allow them to survey an area for unexploded ordnances," Waltz said. "One of the towed sensors was the EM-61, capable of detecting objects several feet underground. When this survey opportunity came about, we immediately identified the system to accomplish this mission.

"Three onsite contractors from our group are running both of the systems," he said. "They visited the area before the trip and described it as 'very flat.' Given the ease of surveying flat terrain, they knew they could provide collaborators with the location of the boat frame in a few weeks."

Waltz said the sensor software program the team used identified multiple targets as it surveyed the area. The robotics team sent the information they collected to the sensor manufacturer who will use the latest software techniques to read the data and narrow it down. When the manufacturer completes the data reduction, Waltz said his team would compile it in a report, which will help archeologists choose where to dig.

Archaeologists involved in the project indicated that members of the Lewis and Clark expedition buried the boat frame, made of 200 pounds of iron, six to 12 feet below the surface.

Due to the dry Great Falls area climate, the archaeologists estimate that only 20 to 40 percent of the iron was lost due to oxidation during the last 200 years.

The expedition that inspired this project began in 1803 when Thomas Jefferson received congressional approval to send a small U.S. Army Unit to explore the Missouri and Columbia Rivers. Jefferson wanted to know whether Americans could follow the two rivers overland to the Pacific Ocean from the Rocky Mountains.

Jefferson expected this would provide American traders with a superior transportation route to help them compete with British fur companies who ventured south from Canada.

In the summer of 1805, Lewis, Clark and the Corps of Discovery reached a point where the Missouri River seemed to divide equally into northern and southern branches. Historical reports indicate that the team thought the south branch was the true Missouri River, so they scouted ahead with a small advance party and set up camp around present-day Great Falls.

Before Lewis and Clark's expedition, Lewis commissioned the building of an iron boat frame, which they had brought along on their expedition. While at their camp, they stretched animal hides across the metal framework to make a lightweight boat and resume their journey on the river.

The plan failed when stitches in the hides began to leak. After days of frustration, they buried the boat frame and continued their journey.

"I therefore relinquished all further hope of my favorite boat and ordered her to be sunk in the water, that the skins might become soft in order the better to take her in [pieces] tomorrow and deposited the iron [frame] at this place as it could probably be of no further service to us," Capt Lewis wrote in his journal on July 9, 1805. "[But,] it was now too late to introduce a [remedy] and I bid adieu to my boat, and her expected services."

Though Lewis and Clark did not ultimately find the easy connection between the Missouri and Columbia Rivers that Jefferson had hoped for, the expedition yielded detailed reports on western geography, Native American customs and languages, animals, plants and climates. @

The Autonomous Mobility Research and Development System (AMRADS).

September 11 - We can all stand against hate

by Gen. Lester L. Lyles, Commander, Air Force Materiel Command

WRIGHT-PATTERSON AFB, Ohio — The unthinkable happened Sept. 11 - a tragedy of such huge proportion that it cannot be fully understood. Air Force Materiel Command people, like the rest of our nation, asked why.

We may never know the full extent of what motivated such acts of terrorism, but we do know the United States became the victim of the ultimate hate crime that day. Even as an African-American youth who came of age during the Civil Rights Movement and the tumultuous Sixties in our nation's capitol, I have no reference point for hate acted out on such a massive, deadly scale. Like most of you, I cannot really grasp hatred so deep and so vicious as we Americans now have experienced.

Since the Sept. 11 attack, we have seen an increase in harassment, slurs, and intimidation because of how people dress, how they look, and the religion they might practice.

The Air Force has a policy of zero tolerance for discriminatory treatment in any form, including against individuals of Arab-American, Middle Eastern, or Muslim descent. Service members who violate this policy are subject to action under the Uniform Code of Military Justice, and civilian employees are subject to administrative and disciplinary actions.

General Lyles

Commanders have been urged at all levels to remain vigilant and take prompt, appropriate action with members of their commands who fail to meet these Air Force standards.

However, what I really want, and most hope, is that all of us will speak against discrimination, harassment, and any other manifestation of this kind of hate that is so fundamentally in opposition to American ideals.

Choose to be the kind of people for which this republic stands: "ONE NATION, UNDER GOD, WITH LIBERTY AND JUSTICE FOR ALL." @

Gen. Jumper, Secretary, chief of staff: A higher calling awaits

by Master Sgt. Rick Burnham, Air Force Print News

WASHINGTON — When he took the reins of the U.S. Air Force on Sept. 6, Chief of Staff Gen. John Jumper hardly could have imagined what the future would hold. That a ruthless band of terrorists would attack in less than a week ... that he and his wife, Ellen, would attend a stirring presidential address to the Congress, preparing the nation for war on terrorists everywhere ... that the Air Force would likely play a key role in that war.

Yet, those were the realities as the new chief of staff spoke before a group of more than 200 Air Staff officer, enlisted and civilian people Sept. 21 at the Pentagon. The general, formerly commander of Air Combat Command at Langley Air Force Base, Va., was introduced by Dr. James Roche, secretary of the Air Force.

"The events of last week opened up a period for us in the Air Force where we have to adapt what we do well to the circumstances and threats we face," said the secretary. "I can tell you that we are blessed that we have a terrific team, and a terrific uniformed leader in John Jumper, to get the job done. I have the greatest confidence in him, and I think, together with you, he will serve our country very well in the years to come."

Following his introduction by the secretary, Jumper spoke of the events of the week before, saying that the world changed for everyone on Sept. 11.

"Once again, airmen stepped forward and responded that day in a heroic way," he said. "We're in a different mode. The president said it better than anyone else could — we are going to march forward in a very determined way."

The U.S. Air Force, he added, is ready for the challenge.

"We were on a transformational path already," he said. "In 1997, General Ryan said we're going to take this AEF idea and make it work for the whole Air Force. So we've been in this period of transition for an extended period of time, and in doing so we've made ourselves ready for the events that confront us today."

It helps, he added, that the entire country is now once again behind the U.S. armed forces, with a single objective in mind: eradicate terrorism and the people and organizations who generate it. Sitting with the Joint Chiefs of Staff during President Bush's Sept. 20 address to Congress, he saw firsthand the solidarity behind this most important cause.

"If there is any one place where you can feel the power of the nation at work, it's in that body," he said. "And what you saw was a very diverse group of people come together behind the president."

The president's speech, he said, was extremely effective, for a very simple reason.

"His heart is in this," Jumper said. "You get the feeling there is a passion involved in this ... there is nothing clinical about it. Of course, we're used to that. We do business on that basis all the time, or we would not be wearing the blue suit. But the nation has it now. You get this profound sense that we have just crossed this very difficult bridge ... civilians are now as much a target as people in uniform. It's frightening, but it's also galvanizing.

"The whole nation is looking at us in uniform to do the nation's business. Is there any higher calling than that? I don't think so."

Then, turning to Roche, "Mr. Secretary, I am proud to be a part of this team. We have before us today, the greatest Air Force in the world. And we are soon going to be able to demonstrate that fact once again. We will soon have to go into harm's way once again, and the men and women of the U.S. Air Force are going to make it happen. It is going to be magnificent, because we're going to do it standing side-by-side."

Down the road, the general said, today's airmen are going to look back at this time with pride.

"The things you tend to look back on are the things most important to you," he said. "I can't remember every year I got a pay raise, but I remember the 11th of September and I'll remember the events ahead of us today.". @

Net Index

Due to the number of submissions we receive, some sections of *news@afrl* are available exclusively on-line. The on-line version of the newsletter allows users to view the AFRL corporate calendar, news releases generated by AFRL headquarters, operating instructions, L@b L@urels and Roundups sections.

The L@b L@urels section of the electronic newsletter is dedicated to members of Air Force Research Laboratory who receive awards and honors. The Roundups section of the electronic newsletter keeps Air Force Research laboratory employees informed about contracts AFRL has awarded. Below is an index of articles one can find in each of these on-line sections.

L@b L@urels

- **AFRL HQ honors team and individual contributions at quarterly ceremony**
- **Program manger to receive small business honors**

Robert D. Hancock

Roundups

- **Contract awarded for IF Directorate Research Facility**

An all new

Meet AFRL...

Featuring the Information Directorate's Barb Frantom…engineer, dancer and Pro Bowl halftime choreographer extraodinaire.

For more on these stories see news@afrl http://extra.afrl.af.mil/news/index.htm

Maj Gen Paul D. Nielsen and the AFRL HQ staff enjoyed sunny skies for the Thank-You luncheon held Tuesday, October 2. Ticket sale proceeds from the annual picnic, which was scheduled for Sept. 12 and cancelled due to the national tragedy on Sept. 11, in addition to other contributions were donated to the Pentagon Relief Fund for its victims. In all, $1,431 was collected and submitted to the fund on Sept. 21. Nielsen and the picnic committee held the luncheon as a thank-you for the generosity and hard work shown over the past few weeks.

To view the full text of these and other articles visit the *news@afrl* page on the Internet at http://extra.afrl.af.mil/news/index.htm.

To submit L@b L@urels or Roundups from your directorate, send a query to AFRL Public Affairs at:

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